Greater Wellington Regional Council air quality monitoring programme

Tamsin Mitchell, GWRC

NZ Centre for Sustainable Cities seminar, 9 May 2018

Air quality monitoring mandate

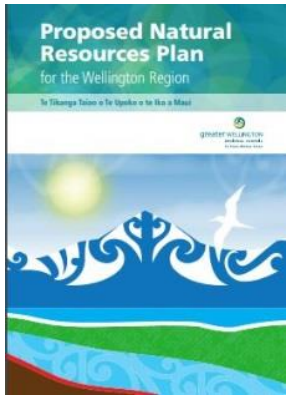
National Environmental Standards

Mandatory minimum standards for key air quality pollutants (PM10, CO, NO_2)

Ministry for the Environment
Manatū Mō Te Taiao

Proposed Natural Resources Plan (RMA)

Outdoor air quality maintained or improved to 'acceptable' levels or better



Regional Land Transport Plan (LTMA)

Reduced harmful pollutants from transport

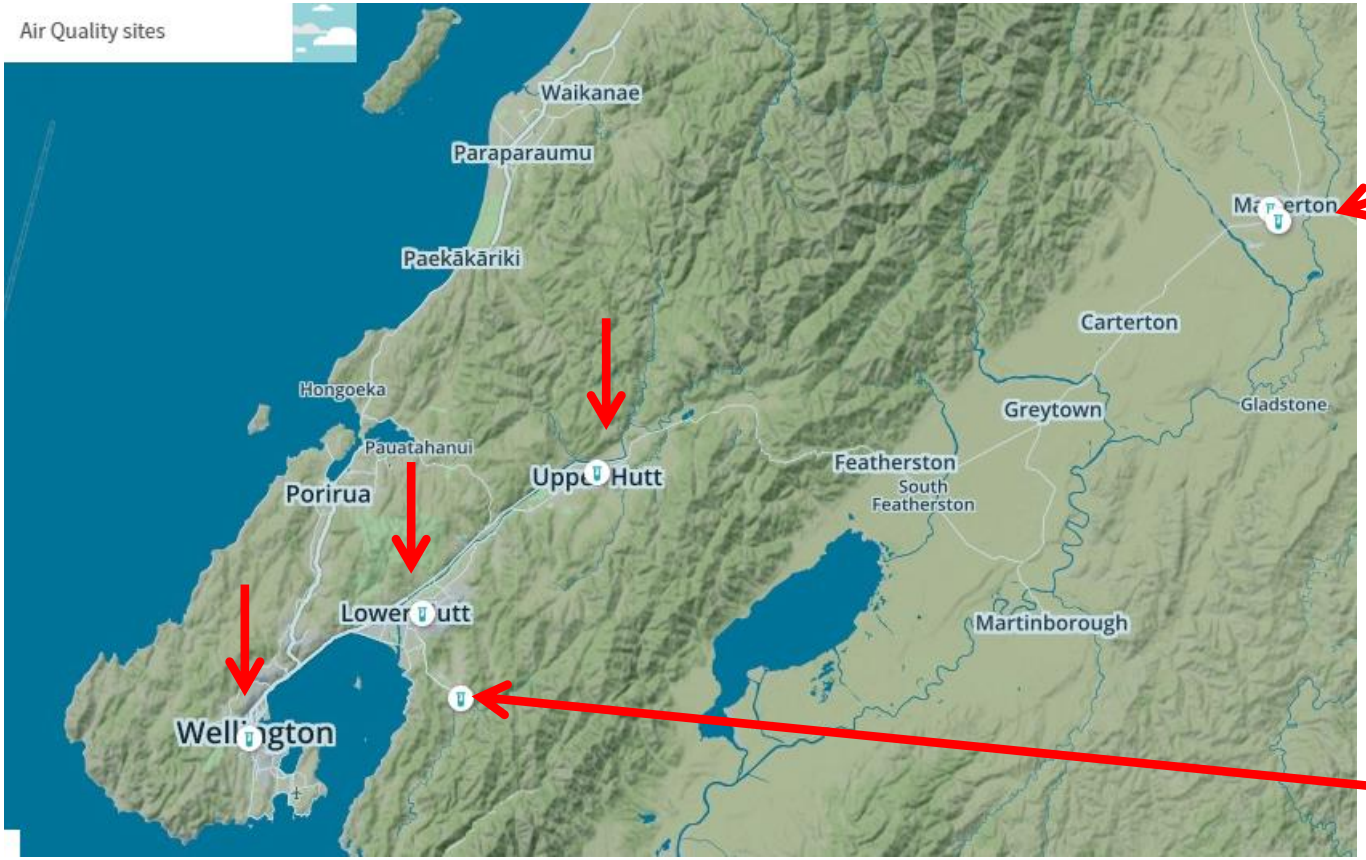
Wood smoke – home fires

Significant source of PM10 and PM2.5 emissions

Masterton, Wairarapa

Raumati South, Kapiti

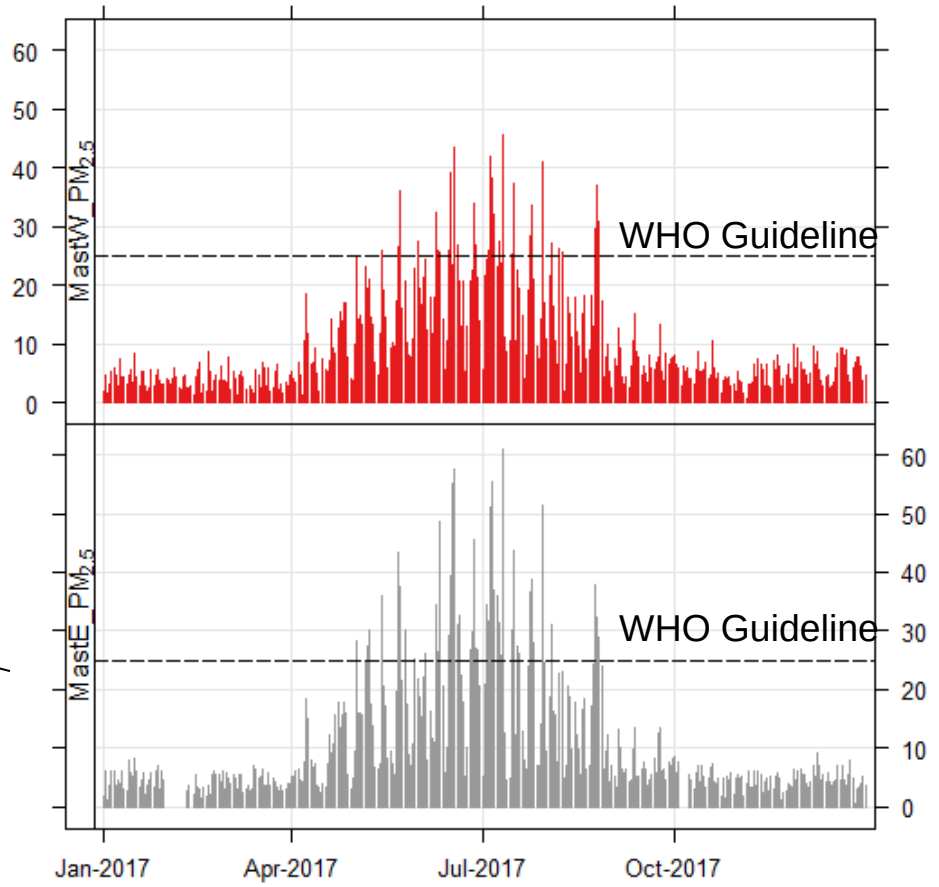
Core network – fixed stations



All monitoring sites comply with national environmental standards (apart from Masterton for PM10)

Wood smoke – PM2.5

Masterton PM2.5 daily average (2017)

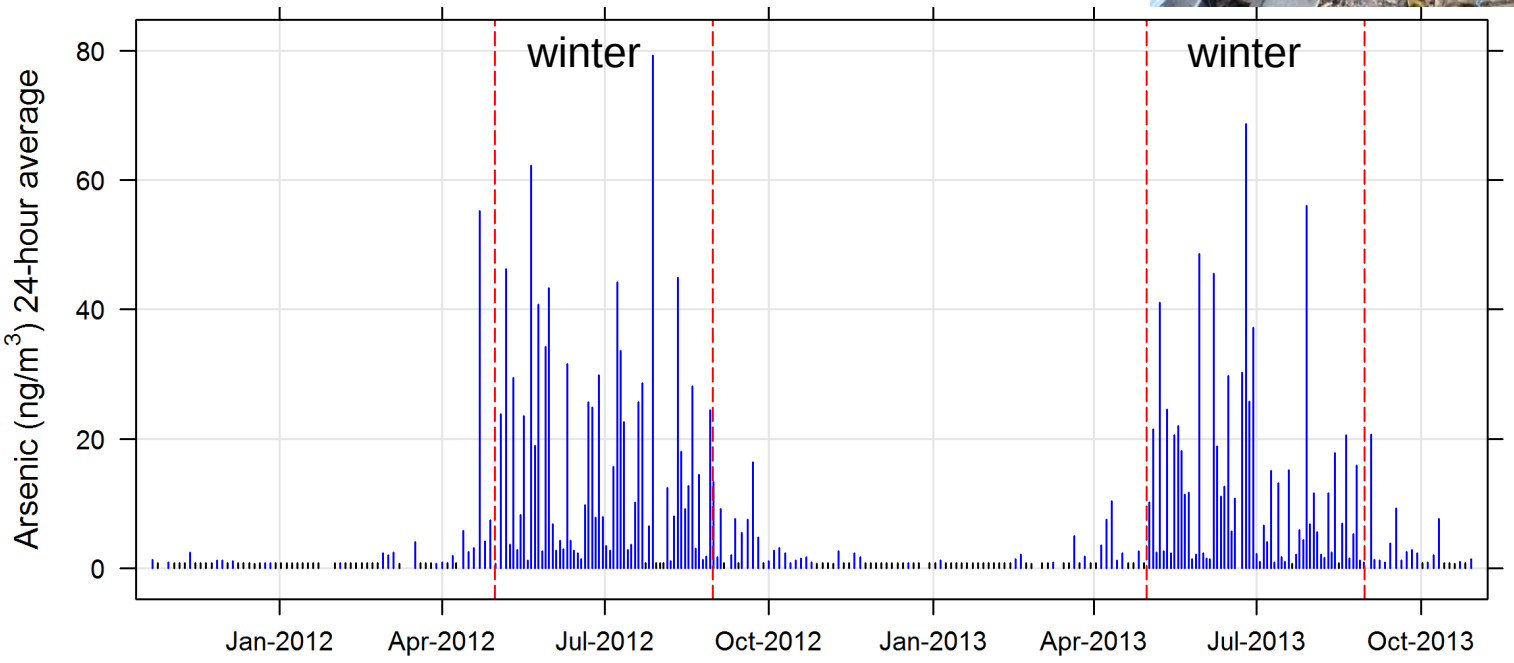


Wood smoke – air toxics

Co-emitted air toxics:

- Arsenic (burning treated timber)
- Lead (old painted timber)
- Benzo-a-pyrene (wood)

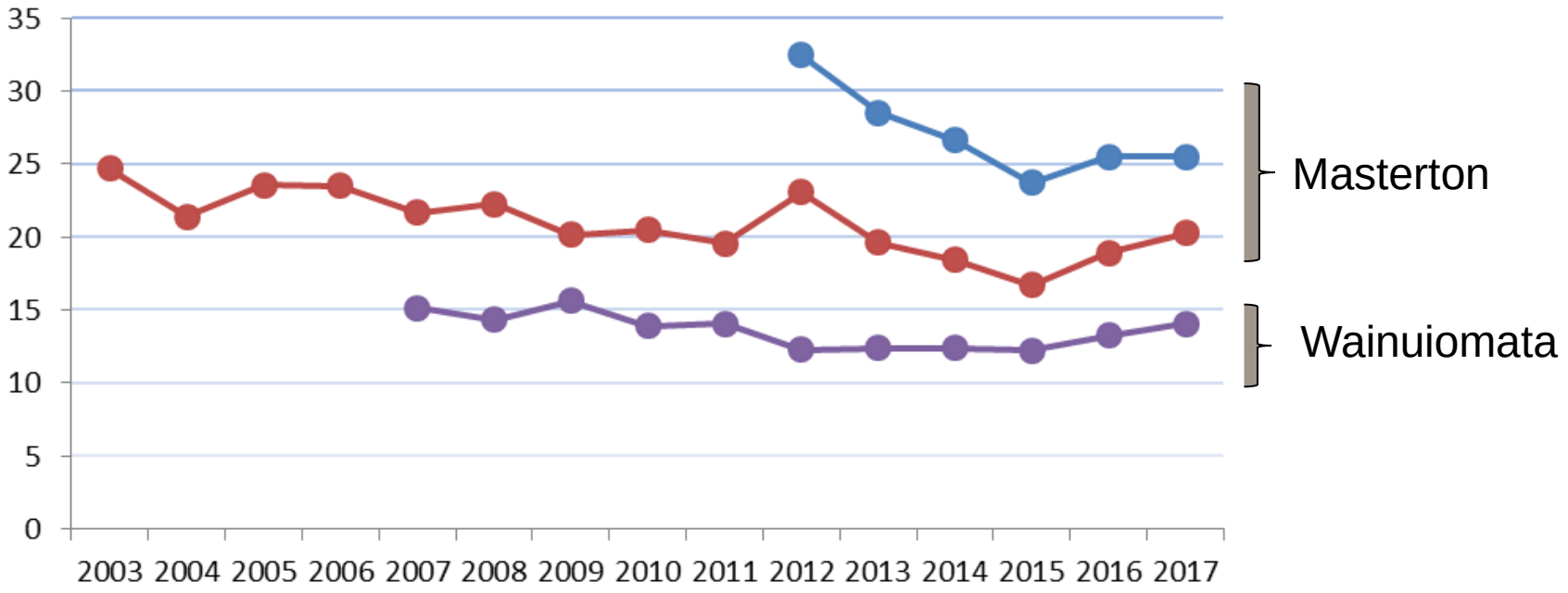
Daily arsenic levels (Wainuiomata, 2012-13)



Wood smoke – trends

- Population shift away from solid fuels
- National wood burner emission standard
- Weather and climate patterns

Trends – average winter PM10



Traffic-related air quality

Significant source of NO_2

Traffic-related air quality

Wellington CBD monitoring site

Air pollutants measured:

- Nitrogen oxides (NOx, NO, NO_2)
- Carbon monoxide
- Black carbon
- PM2.5
- PM10
- Ozone (new)

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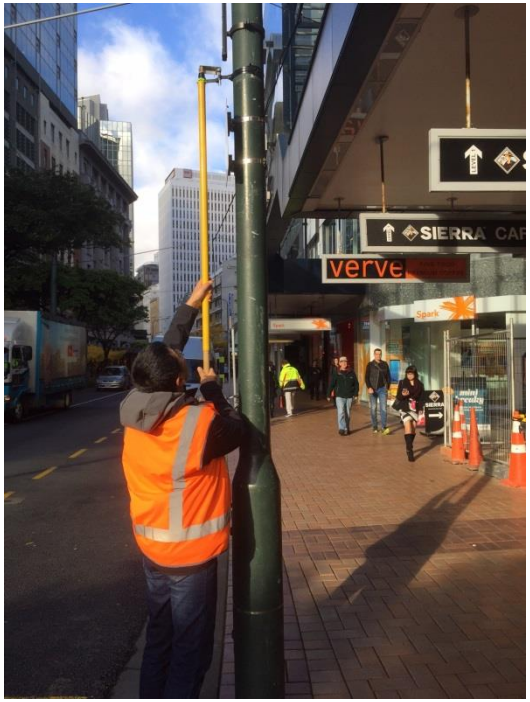
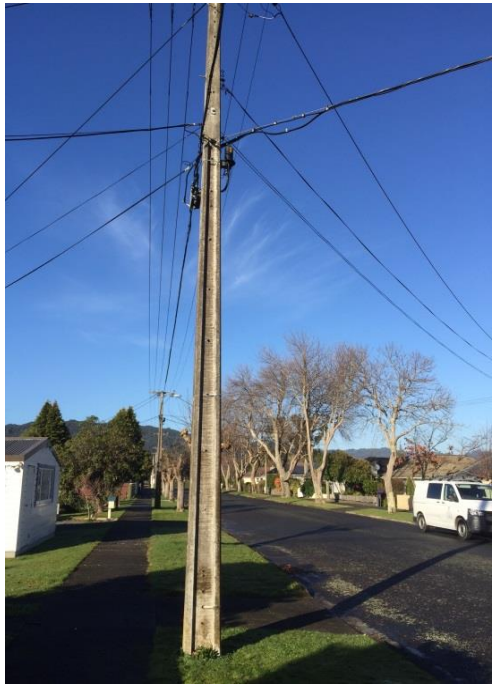
Traffic-related air quality

Regional coverage through NO_2 passive monitoring tubes network



Peak (11 sites)

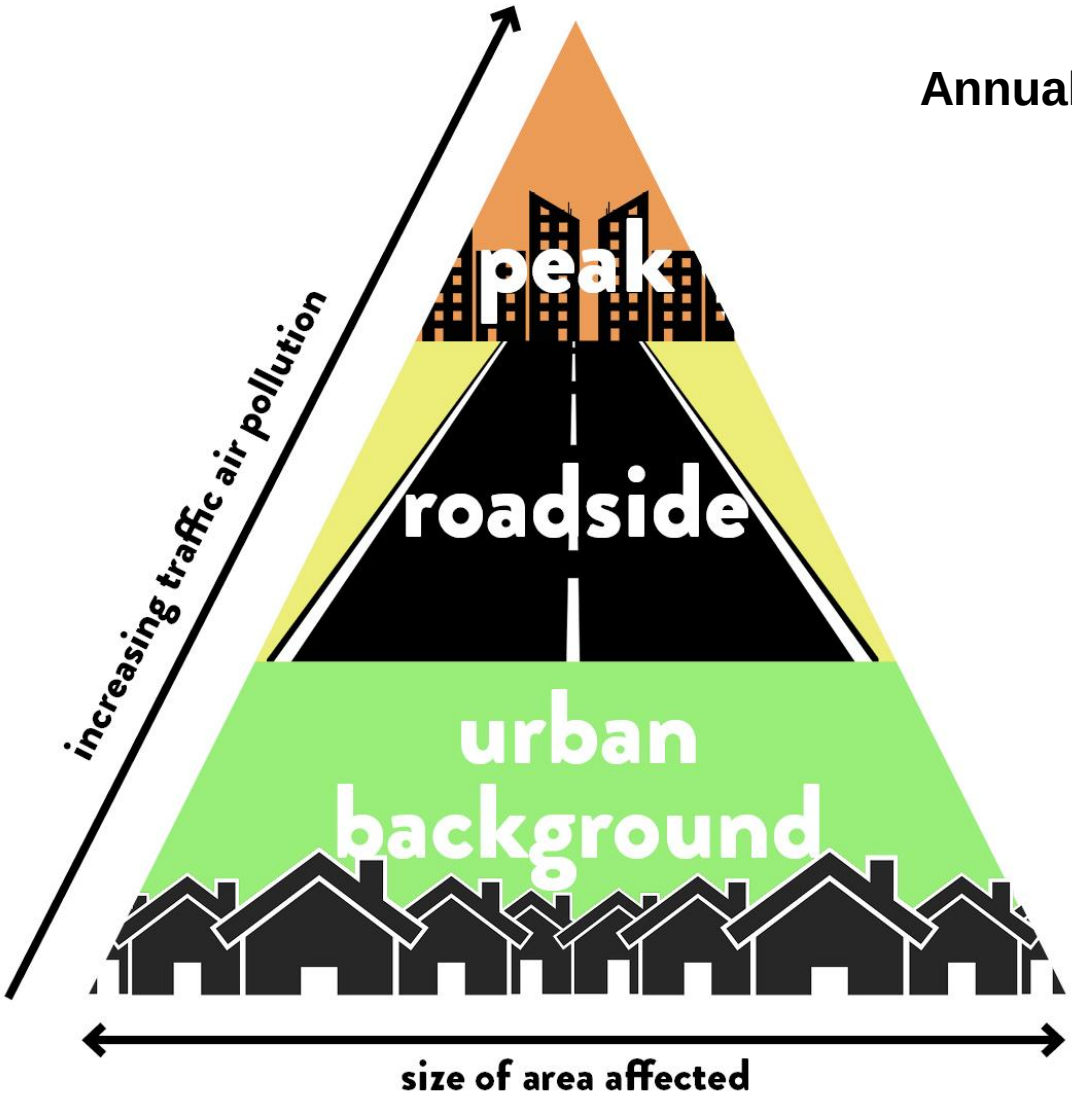
Roadside (11 sites)



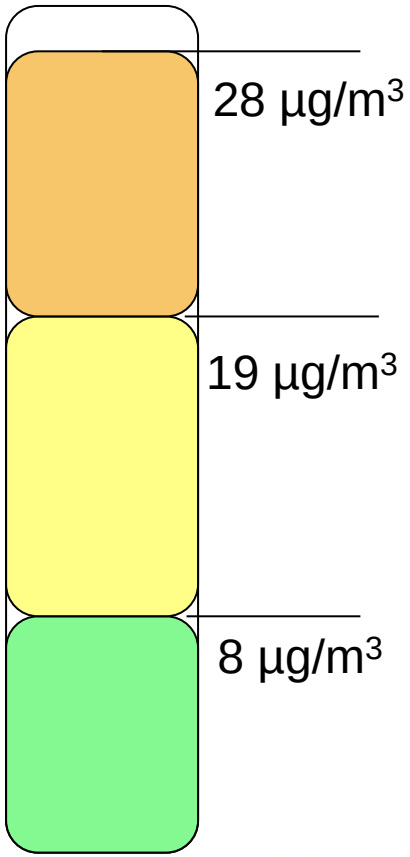
Urban background (7 sites)

Mix of NZTA national network sites and GWRC regional sites

Traffic-related air quality – NO_2



Annual average NO_2 tube data (2017)



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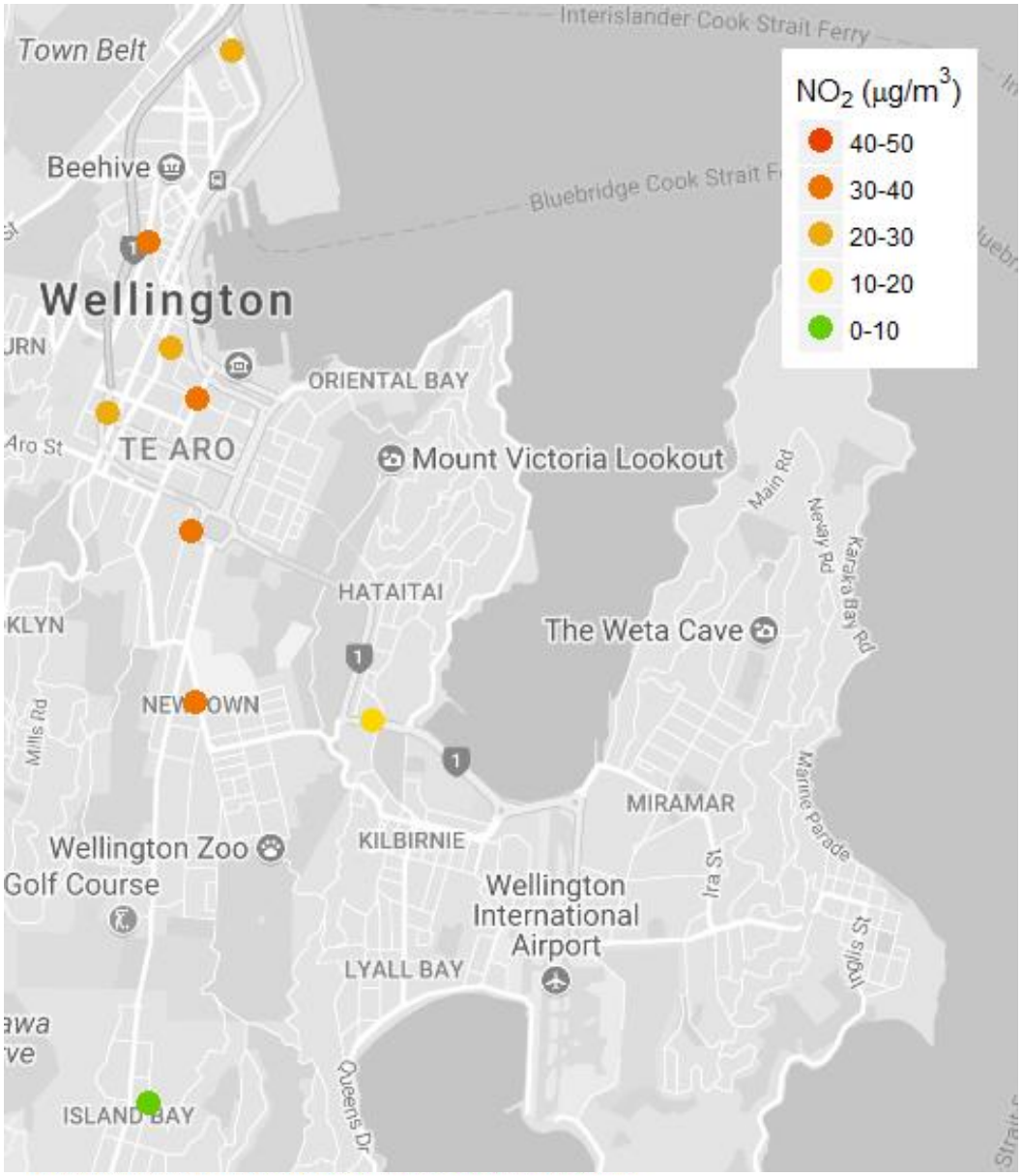
Traffic-related air quality - trends



Annual average NO_2 tube data (2017)

Based on interim 2017 data from NZTA's national NO_2 monitoring network

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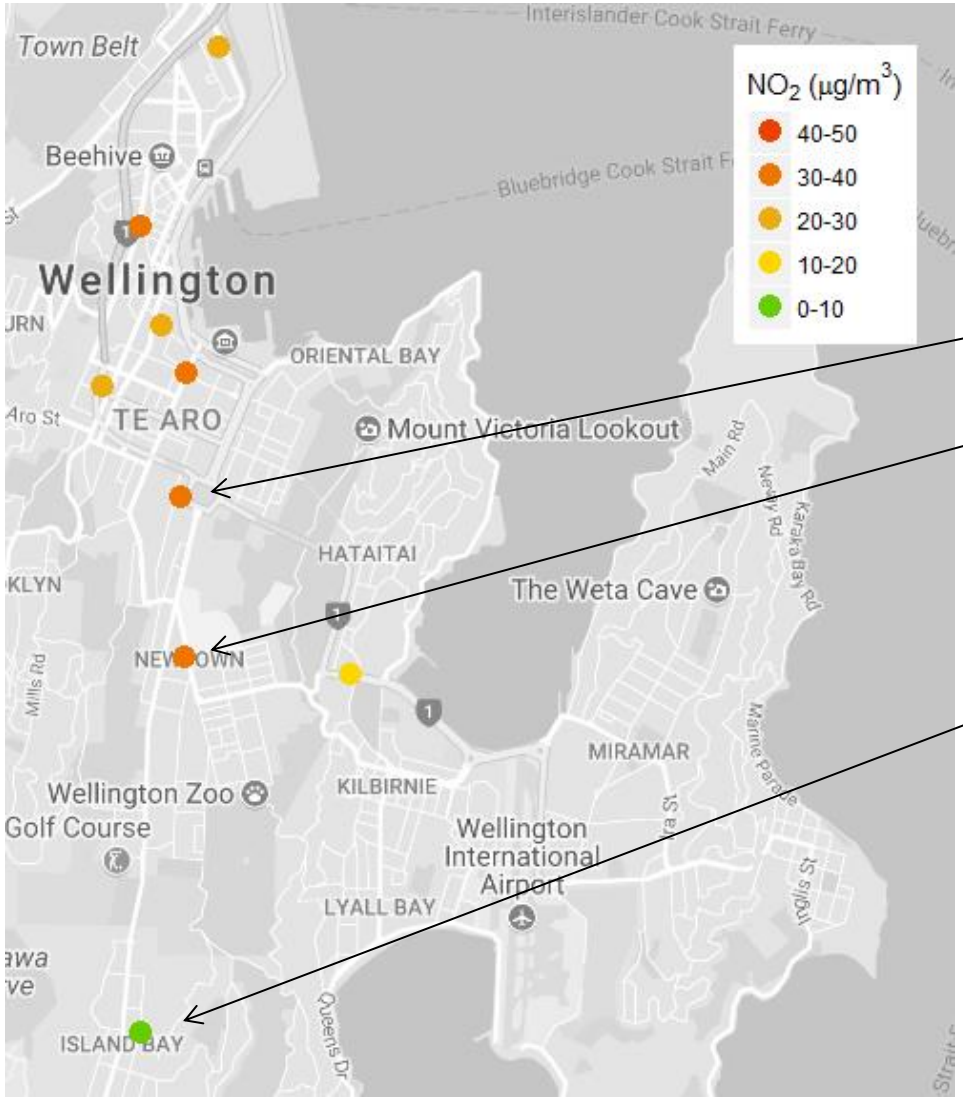
Traffic-related air quality - trends

Annual average NO_2 tube data (2017)



Trends 2010 to 2017

Basin Reserve:
Degrading

Newtown:
No trend

Improving but flat
last four years

Based on interim 2017 data from NZTA's national NO_2 monitoring network

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Future aspirations

- Distributed networks for better coverage for other pollutants – eg, fine particles and black carbon
- Public engagement and involvement (citizen science)
- Behaviour change – improving burning practices
- Link to exposure studies

Acknowledgements

NZ TRANSPORT AGENCY WAKA KOTAHI

wells

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NIWA Taihoro Nukurangi

emission: impossible ltd

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